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Paul T. Y. Preenen, Irene E. De Pater, Annelies E. M. Van Vianen and Laura Keijzer

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# Managing Voluntary Turnover Through Challenging Assignments

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## Abstract

This study examines employees' challenging assignments as manageable means to reduce turnover intentions, job search behaviors, and voluntary turnover. Results indicate that challenging assignments are negatively related to turnover intentions and job search behaviors and that these relationships are mediated by on-the-job learning. Moreover, results show that an increase in challenging assignments over time is negatively related to voluntary employee turnover, when controlling for employees' initial turnover intentions and job search behaviors. A decrease in challenging assignments is positively related to voluntary turnover, when controlling for employees' initial turnover intentions and job search behaviors. These results suggest that challenging assignments may be a valuable tool for managers and their organizations to lower voluntary employee turnover.

## Keywords

managing voluntary turnover, challenging assignments, on-the-job learning

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Voluntary employee turnover, the departure from an organization despite having the opportunity to remain (Price, 1977; Wright & Cropanzano, 1998), is a significant problem for many organizations (Proudfoot, Corr, Guest, & Dunn, 2009) as the cost of replacing employees and educating new employees is high. Moreover, expected labor shortages on the longer term due to the graying labor force and impending baby-boomer retirements (Hedge, Borman, & Lammlein, 2006; Toossi, 2007) further induce the need for effective strategies for maintaining employees (Morrow, Suzuki, Crum, Ruben, & Pautsch, 2005). High turnover rates (Aarons & Sawitzky, 2006; Glisson & James, 2002) and ageing (Nauta, Vianen, Van der Heijden, Van Dam, & Willemsen, 2009; Van Essen, Paardekooper, Talma, & Van der Windt, 2006) are particularly causing shortage problems in the health care and welfare sector, especially as this sector has difficulties with attracting younger employees (Nauta, 2007). Hence, maintaining valuable employees is urgent in this sector.

Popular and applied literatures (e.g., Chartered Institute of Personnel and Development [CIPD], 2005; Loquercio, 2006; Salopek, 2000) often proposed, but never empirically examined, that organizations should create challenging jobs to avoid voluntary employee turnover. Providing employees with challenging assignments may indeed help organizations to reduce voluntary turnover. First, research has shown that individuals are particularly attracted to organizations that offer challenging jobs (Boswell, Roehling, LePine, & Moynihan, 2003; Slaughter, Richard, & Martin, 2006) and that job challenge is positively associated with perceived meaningfulness of work (e.g., Brown & Leigh, 1996; Kahn, 1990), intrinsic motivation (Gagné, Senécal, & Koestner, 1997; Hackman & Oldham, 1980), work engagement (Kahn, 1990; Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010), and job satisfaction (e.g., Judge, Bono, & Locke, 2000; Podsakoff, Lepine, & Lepine, 2007), suggesting that offering challenging jobs may be a means to retain employees. Second, challenging assignments are found to result in on-the-job learning and employee development (e.g., DeRue & Wellman, 2009; Dragoni, Tesluk, Russell, & Oh, 2009; McCauley, Ruderman, Ohlott, & Morrow, 1994), which can satisfy inherent needs of people, such as the desire to acquire and exercise competence (e.g., Elliot & Dweck, 2005; Ryan & Deci, 2000). Employees may thus highly value having challenging assignments in their jobs as these assignments lead to learning and development and they may, therefore, be less inclined to voluntarily leave their organization.

The proposition that organizations should create challenging jobs to avoid voluntary employee turnover is in line with human resource management scholars who view organizational initiatives for employee development as part of a strategy to increase employee commitment to the organization and,

thereby, to reduce voluntary turnover (e.g., Barrett & O'Connell, 2001; Lee & Bruvold, 2003; Paré & Tremblay, 2007). However, from a human capital point of view (Becker, 1962), it could be argued that providing challenging assignments may increase employees' opportunities for employment in other organizations (Benson, Finegold, & Mohrman, 2004; Campbell & Campbell, 2003; Ito & Brotheridge, 2005) and thus may boost voluntary turnover. These opposing views ask for a further investigation of the consequences of providing employees with challenging assignments.

In the current study, we examine consequences of providing employees with challenging assignments for on-the-job learning, turnover intentions, job search behaviors, and actual voluntary employee turnover within the 2 years following Time 1 measurements in the health care and welfare sector. Specifically, we propose and test a model in which challenging assignments lead to on-the-job learning, which in turn decreases employees' turnover intentions and job search behaviors. Second, we employ a two-wave design to examine the consequences of changes in challenging assignments and on-the-job learning for voluntary employee turnover. This allows us to examine whether changes in these variables over time affect how people act on their initial (Time 1) turnover intentions and follow up on their job search behaviors.

With our study, we make several key contributions. First, we seek to respond to the controversy between human resources and human capital theories as described above. In addition, we address the conflicting interests that organizations may consider between increasing employees' human capital to cope with technological changes and competition (Nauta et al., 2009) on the one hand and retaining their capable employees on the other hand. Second, we focus on predictors of voluntary employee turnover that are potentially under the control of organizations, such as employee challenge and learning (Cianni & Romberger, 1995; De Pater, Van Vianen, & Bechtoldt, 2010; King et al., in press).

## **Challenging Assignments and On-the-Job Learning**

Job challenge has been conceptualized as "level of difficulty and stimulation" (Taylor, 1981, p. 255), as "being in dynamic settings with problems to solve and choices to make under conditions of risk and uncertainty" (McCauley, Ohlott, & Ruderman, 1999, p. 4), and as "having to meet performance expectations that are reasonably high" (Berlew & Hall, 1966, p. 209). In short, people are challenged if they are taken outside their comfort zone (McCauley, Van Velsor, & Ruderman, 2010).

**Challenging assignments enhance on-the-job learning because they often involve confrontations with new situations in which existing tactics and routines**

are inadequate and individuals have to develop new strategies and skills (Davies & Easterby-Smith, 1984; McCall, Lombardo, & Morrison, 1988). Challenging experiences “create disequilibrium, causing people to question the adequacy of their skills, frameworks, and approaches” (McCauley et al., 2010, p. 9), which motivates them to develop new skills, abilities, insights, knowledge, and competences that enable them to function effectively (McCall et al., 1988; McCauley et al., 1994). Challenging assignments also create opportunities for on-the-job learning because they provide “a platform for trying a new behavior or reframing old ways of thinking or acting” (McCauley et al., 1994, p. 544).

Research on challenging work experiences has mainly been performed in the context of management development (e.g., DeRue & Wellman, 2009; Dragoni et al., 2009; McCauley et al., 1994). For that purpose, McCauley and colleagues (McCauley et al., 1994, 1999) identified five clusters of work experiences that represent challenging aspects of work: (a) job transitions, with individuals being confronted with new tasks and situations in which existing tactics and routines are inadequate; (b) creating change, with individuals having a clear goal to change a situation but a loosely defined role that gives them the freedom to determine how to accomplish the goal; (c) managing at high levels of responsibility, characterized by increased visibility, the opportunity to make a significant impact, dealing with broader and more complex problems and higher stakes; (d) managing boundaries, where employees have to work with people over whom they have no direct authority and have to develop strategies for influencing them and gaining their cooperation; and (e) dealing with diversity, when working with people who are different from themselves regarding their values, backgrounds, experiences, and needs. These types of work experiences are considered to be challenging as they are new and ask for nonroutine skills and behaviors, test one’s abilities or resources, give the freedom to determine how to accomplish the task, and involve a higher level of responsibility and visibility (Van Vianen, De Pater, & Preenen, 2008).

Research has consistently shown that challenging assignments result in on-the-job learning (DeRue & Wellman, 2009; Dragoni et al., 2009; Lyness & Thompson, 1997, 2000; McCauley et al., 1994). On-the-job learning refers to “all implicit or explicit mental and/or overt activities and processes, performed in the context of work, leading to relatively permanent changes in knowledge, attitudes, or skills” (Berings, Poell, & Simons, 2008, p. 418) and has been recognized as being the most important type of learning within organizations (Clarke, 2004; Yeo & Marquardt, 2010; Yip & Wilson, 2010). Although most research on the relationship between challenging assignments

and on-the-job learning has been performed in the context of management development, research indicated that employees in nonmanagerial jobs face similar challenging experiences in their work (De Pater, Van Vianen, Bechtoldt, & Klehe, 2009). We propose the following:

*Hypothesis 1:* The extent to which employees have challenging assignments will positively relate to their on-the-job learning.

## Job Challenge, On-the-Job Learning, and Voluntary Employee Turnover

Challenging assignments increase employees' human capital by both deepening their existing skills and abilities and broadening their scope of skills and abilities (Yip & Wilson, 2010). Thereby, challenging assignments, through on-the-job-learning, lead to a wide range of skills, abilities, insights, knowledge, and values that enable them to function effectively in organizations (McCall et al., 1988; McCauley et al., 1994). The latter is in line with human capital theory (Becker, 1962), which proposes that on-the-job learning increases employees' potential productivity. According to human capital theory, on-the-job learning leads to both specific and general human capital (Becker, 1962; Loewenstein & Spletzer, 1999). Specific human capital increases employees' productivity in the organization of employment. General human capital encompasses knowledge, skills, and capacities that enhance employees' potential productivity in other organizations as well and thus enriches their value at the labor market. Hence, providing employees with opportunities for learning may result in higher voluntary turnover (Cappelli, 2004; Ito & Brotheridge, 2005; Stroh, Brett, & Reilly, 1994). Indeed, several studies have shown that human capital investments resulted in higher turnover intentions (Benson et al., 2004; Ito & Brotheridge, 2005; Mueller & Price, 1990; Price & Mueller, 1981; Proudfoot et al., 2009). Most of these studies, however, examined consequences of formal training and education rather than consequences of on-the-job learning.

There are several reasons to assume that formal learning will enhance, whereas on-the-job learning will lower, employees' turnover intentions, job search behaviors, and voluntary turnover. First, formal education and training takes place outside the workplace and is "highly institutionalized, bureaucratic, curriculum driven, and formally recognized with grades, diplomas, or certificates" (Merriam, Caffarella, & Baumgartner, 2007, p. 29). An employee's formal education and training may thus easily function as a signal of her potential productivity to a broad range of organizations (Ng & Feldman, 2010).

The knowledge, skills, and capacities that employees develop through on-the-job learning are less easily observable for other organizations as they are not expressed in diplomas and certificates. As many organizations use education level as a screening criterion in their selection procedures (Kroch & Sjöblom, 1994; Maglen, 1990), formal training rather than on-the-job learning may induce job changes.

Second, and more importantly, although both formal and on-the-job learning might fulfill employees' basic human need for competence (e.g., Elliot & Dweck, 2005; Ryan & Deci, 2000), formal training as opposed to on-the-job learning does not necessarily promote employees' intrinsic motivation and work engagement in the job. That is, the newly acquired knowledge and skills from formal training are often not transferred to one's job (e.g., Bennett, Lehman, & Forst, 1999; Blume, Ford, Baldwin, & Huang, 2010; Ford, Quinones, Sego, & Sorra, 1992). After participating in a training, people only apply about 20% of what they have learned in their work (Ford, 2009). In addition, meta-analytic research on the effectiveness of training in organizations (Arthur, Bennett, Edens, & Bell, 2003) revealed a large discrepancy between what individuals learned from a training and the extent to which this led to changes in their work behaviors and performance. Indeed, the transfer of training largely depends on the opportunities employees have at work for actually utilizing their knowledge and skills (e.g., Arthur et al., 2003; Ford et al., 1992). A lack of these opportunities does not only lead to performance decrements (Ford et al., 1992) but also to perceptions of demands-abilities misfit (i.e., job requirements do no longer fit one's knowledge and skills), which will lower work engagement and increase turnover intentions and behaviors (Benson et al., 2004). Contrary to formal learning, on-the-job learning entails the development of employees' knowledge and skills while working; hence, problems of transfer and related job disengagement are less of an issue (Aragón-Sánchez, Barba-Aragón, & Sanz-Valle, 2003). Instead, on-the-job learning tends to increase individuals' work engagement.

While performing challenging work, people need to bridge a certain gap between their current skills and the skills that are required for the task, which causes them "to struggle and stretch beyond their current capabilities" (Yip & Wilson, 2010, p. 69). Challenging assignments induce "employees to invest greater amounts of their physical, cognitive, and emotional resources in their work" (Brown & Leigh, 1996, p. 361) to successfully deal with the work demands. These types of high investments have been found to be related to high psychological meaningfulness of the work experience (Brown & Leigh, 1996; Kahn, 1990). Kahn (1990) described psychological meaningfulness as "a feeling that one is receiving a return on investment of one's self

in a currency of physical, cognitive, or emotional energy” (pp. 703-704) and considered psychological meaningfulness to be an important predictor of work engagement. Work engagement, defined as a persistent and pervasive (Schaufeli, Bakker, & Salanova, 2006) positive affective-cognitive state of work-related well-being (Schaufeli & Bakker, 2004), is characterized by vigor, dedication, and absorption. Employees who are engaged in their work have high levels of energy, are enthusiastic about their work, and are often fully immersed in their job. Therefore, they will be less inclined to leave their jobs and look for jobs outside their current organization. Indeed, research has indicated that work engagement negatively relates to voluntary employee turnover (Harter, Schmidt, & Hayes, 2002).

The assumption that challenging characteristics of work induce a motivation process that facilitates intrinsic motivation and work engagement is in line with the job–demands–resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), the job characteristics model (Hackman & Oldham, 1980), and self-determination theory (Ryan & Deci, 2000). The JD-R model proposes that work engagement results from a motivational process that is activated by work characteristics that stimulate personal growth, learning, and development (Schaufeli & Bakker, 2004, p. 296). As challenging assignments increase employees’ knowledge, skills, and abilities (DeRue & Wellman, 2009; Dragoni et al., 2009), they boost their work engagement and subsequently lower their turnover intentions and behaviors. In a similar vein, the job characteristics model postulates that challenging work enhances intrinsic motivation through the psychological processes of experienced meaningfulness, felt responsibility, and knowledge of results (Hackman & Oldham, 1975, 1980). Hence, by increasing employees’ intrinsic motivation, challenging assignments will likely decrease turnover intentions and job search behaviors (Griffeth, Hom, & Gaertner, 2000; Houkes, Janssen, Jonge, & Nijhuis, 2001; Richer, Blanchard, & Vallerand, 2002). Finally, self-determination theory (Ryan & Deci, 2000) argues that the need for competence and the need for autonomy underlie intrinsic motivation (Gagné & Deci, 2005). That is, if work satisfies employees’ need for competence, such as the mastery of new skills, and employees have the freedom to determine how to accomplish their work goals, such as when performing a challenging task (McCauley et al., 1994; Van Vianen et al., 2008), employees feel intrinsically motivated. All in all, seminal motivational theories support the contention that challenging assignments bolster work engagement and thus diminish turnover cognitions and that they do so because they satisfy employees’ need for competence through the experience of learning. We propose the following:

*Hypothesis 2:* The extent to which employees have challenging assignments will negatively relate to their turnover intentions (2a) and job search behaviors (2b).

*Hypothesis 3:* On-the-job learning will mediate the negative relationships between challenging assignments and turnover intentions (3a) and job search behaviors (3b).

## Actual Voluntary Turnover

Employee turnover intentions and job search behaviors are significantly but not perfectly related to actual voluntary turnover (Gerhart, 1990; Griffeth et al., 2000). First, extraneous factors such as the availability of alternative jobs often interfere with individuals' ability to translate intentions into behavior (Campbell & Campbell, 2003; Griffeth et al., 2000). Second, and more relevant for our two-wave study, employees' work and learning experiences are dynamic: they may change during the time between the measurement of the predictor variables and the criterion variables (McDaniel, Schmidt, & Hunter, 1988).

The way in which challenging assignments and on-the-job learning evolve over time may affect whether employees ultimately act on their initial turnover intentions and follow up on their job search behaviors. For example, employees' initial intention to *stay* in the organization as measured at Time 1 may indeed result in longer organizational tenure or, instead, in an unanticipated job change at Time 2 if challenging assignments and on-the-job learning decrease over time. Likewise, employees' initial intention to *leave* the organization as measured at Time 1 may indeed lead to a job change or, instead, to an unanticipated organizational tenure at Time 2 if challenging assignments and on-the-job learning increase over time. In this study, we address these possible changes in challenging assignments and on-the-job learning and examine how these changes affect actual voluntary turnover while controlling for employees' initial turnover intentions and job search behaviors. Consistent with our earlier hypotheses, we propose the following:

*Hypothesis 4:* Changes in challenging assignments will impact voluntary turnover above and beyond the influence of initial turnover intentions and job search behaviors, such that an increase in challenging assignments will result in lower voluntary turnover and a decrease in challenging assignments will result in higher voluntary turnover.

*Hypothesis 5:* The relationship between changes in challenging assignments and voluntary turnover will be mediated by changes in on-the-job learning.

## Method

### Research Design

To test our hypotheses, we used a two-wave panel study. At Time 1, respondents indicated the degree to which they obtained challenging assignments from their supervisor, on-the-job learning, turnover intentions, and job search behaviors. This was a first step to test our process model predicting turnover intentions and job search behaviors. It has been suggested that measuring predictor and criterion variables at the same point in time is appropriate especially if predictor variables are dynamic and thus may change during the time between the measurement of predictor and criterion variables (McDaniel et al., 1988). Employees' work experiences are indeed dynamic, so we decided to first establish the proposed relationships at one point in time. However, we realized that any causality between predictor variables and proxies of turnover (i.e., turnover intentions and job search behaviors) could not be tested in this way. Moreover, we ultimately aimed to investigate whether challenging assignments and on-the-job learning could predict actual voluntary turnover. Hence, we measured actual voluntary turnover 2 years later (Time 2). Yet, changes in challenging assignments and on-the-job learning might have weakened the relationships between the initial predictor and criterion measures at Time 1 and actual turnover as measured at Time 2. Therefore, we also assessed challenging assignments and on-the-job learning at Time 2, which enabled us to examine whether changes in challenging assignments and on-the-job learning over time could account for how people acted on their initial turnover intentions.

For employees who did not change jobs between Time 1 and Time 2, we assessed challenging assignments and on-the-job learning in their current job. For employees who voluntarily changed jobs between Time 1 and Time 2, we assessed challenging assignments and on-the-job learning in their prior Time 1 job, that is, the job they had recently left voluntarily. All in all, our research design allowed us to examine both cross-sectional and longitudinal relationships between challenging assignments, on-the-job learning, turnover intentions, job search behaviors, and actual voluntary turnover.

### Sample

At Time 1, our sample consisted of 702 employees (19.4% male) working in **health care and welfare organizations** in the Netherlands (e.g., nursing homes, public assistance, youth care, day care, mental health care, hospitals, and care for the mentally disabled). They were all members of a so-called Internet

panel. The Internet panel company preselected a total of 8,229 members who indicated to be working in the health care and welfare sector when registering for this Internet panel. These panel members received an email in which they were asked to fill out an online questionnaire about their work experiences. A total of 1,137 (response rate 13.82%) panel members responded; 702 of them still worked in health care or welfare and had not changed their job during the previous year. This latter group comprised the sample in the current study (net response rate 8.53%) because we were interested in explaining turnover intentions, job search behaviors, and voluntary employee turnover of employees who have been performing their jobs for a substantial time. Mean age of the respondents was 35.5 years ( $SD = 10.56$ ). Two hundred twenty-two of the respondents held a bachelor's or master's degree, 480 respondents held a professional or no degree after high school.

The response rate is low but understandably so. First, although panelists voluntarily sign up to be a panel member, the rapid increase in web-based surveys (Evans & Mathur, 2005) may easily lead to oversurveying, which might make panel members reluctant to participate (Couper, 2000; Neslin, Novak, Baker, & Hoffman, 2009). Second, between signing up as a panel member and the time of this study, panel members might have changed jobs, and therefore, they might not have responded. Third, as spam (i.e., unsolicited junk mail) causes major problems for both individuals and organizations, large proportions of the emails sent by commercial organizations end up in spam folders (Evans & Mathur, 2005) or are blocked at email servers (Bannan, 2003). Fourth, due to cost restraints, we were unable to send out reminder emails to the panel members, which may have lowered our response by 20% to 40% (Dillman, 2000).

We believe the above reasons are more plausible causes of the low response rate than the nature of the question under study. Nevertheless, as has been recommended (Baruch, 1999; Baruch & Holtom, 2008), we compared our sample demographics with recent statistics of the labor market in the Dutch health care and welfare sector (Van Essen et al., 2006). These statistics showed that employees in this sector (20.5% male) are on average 41 years of age and that 38% holds a bachelor's or master's degree, whereas 62% had professional or no education after high school. These demographics are almost similar to the demographics of our sample, indicating that our sample may be a good representation of employees working in the health care and welfare sector.

Two years later (Time 2), panel members who responded to the first questionnaire were asked to fill out a second online questionnaire. Three hundred ninety-six of them participated in the second measurement. Fifteen of them

indicated that they had changed jobs involuntarily between the Time 1 and Time 2 measurements. Their questionnaires were excluded from our study. Hence, at Time 2, our sample consisted of 381 respondents (21.8% male; response rate = 54%). Mean age of the respondents was 36.8 years ( $SD = 10.56$ ), 257 of the respondents (32.2%) held a bachelor's or master's degree, 122 respondents (67.8%) held a professional or no degree after high school.

The attrition between Time 1 and Time 2 measurements was considerable. Even though the Time 1 and Time 2 samples hardly differed regarding their demographics, we examined whether respondents who only filled out the Time 1 questionnaire differed from the respondents who participated in both measurements in the most important independent and dependent variables. ANOVA showed that the two groups did not differ regarding their challenging assignments,  $F(1, 673) = .13, p = .72$ , on-the-job learning,  $F(1, 682) = .22, p = .64$ , turnover intentions,  $F(1, 685) = .28, p = .60$ , and job search behaviors,  $F(1, 685) = .05, p = .83$  measured at Time 1.

## Measures

**Challenging assignments.** The extent to which respondents obtained challenging assignments was measured with a six-item questionnaire (see appendix) derived from De Pater and colleagues (De Pater et al., 2010; De Pater, Van Vianen, Bechtoldt et al., 2009; De Pater, Van Vianen, Fischer, & Van Ginkel, 2009). This scale was developed based on the descriptions of the clusters of challenging work aspects (McCauley et al., 1994) and the items of the Job Challenge Profile (McCauley et al., 1999) and has previously been used to assess the extent to which employees have challenging job experiences (De Pater, Van Vianen, Bechtoldt et al., 2009; De Pater, Van Vianen, Fischer et al., 2009) and the extent to which supervisors assign challenging job experiences to their subordinates (De Pater et al., 2010).

Respondents indicated their agreement with the items on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Confirmatory factor analyses showed that the six items loaded on one factor (Time 1:  $\chi^2 = 30.24, p < .00, df = 7$ , Nonnormed Fit Index [NNFI] = 0.97, Comparative Fit Index [CFI] = 0.98, Incremental Fit Index [IFI] = 0.98, standardized root mean square residual [SRMR] = 0.03; Time 2:  $\chi^2 = 19.25, p < .01, df = 7$ , NNFI = 0.99, CFI = 0.99, IFI = 0.99, SRMR = 0.02). Cronbach's alphas were .90 at Time 1 and .92 at Time 2.

**On-the-job learning.** The extent to which respondents learned in their jobs was assessed with the three items (a) "My job demands that I constantly learn new things", (b) "In my job I learn a lot", and (c) "In my job I can develop

my talents and skills". Respondents indicated their agreement with the items on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach's alphas were .85 at Time 1 and .86 at Time 2.

**Turnover intentions.** Respondents' turnover intentions were measured with the item "Given your choice, what are the chances that you will change your job in the next twelve months?" This item has often been used in previous research (e.g., Davy, Kinicki, & Scheck, 1997; Hom & Griffeth, 1991; Johnston, Griffeth, Burton, & Carson, 1993). Scale anchors ranged from 1 (*very unlikely*) to 5 (*very likely*).

**Job search behaviors.** The extent to which respondents engaged in job search behaviors was measured with three items ( $\alpha = .75$ ) derived from the Employability Activity Scale (Van Dam, 2004) and the Job Search Behavioral Index (JSBI; Kopelman, Rovenpor, & Millsap, 1992). Participants indicated (a) how many times they had applied for a job in the previous year on a scale ranging from 1 (*0 times*) to 5 (*more than 3 times*), (b) the extent to which they stayed informed about vacancies for other jobs, and (c) the extent to which they were actively searching for ways to change their job situation on a scale ranging from 1 (*not at all*) to 5 (*very much*). An exploratory factor analysis with varimax rotation showed that the three items loaded on one factor that explained 67.05% of the variance.

**Voluntary turnover.** At Time 2, we assessed voluntary employee turnover with the questions "Did you, in the past 2 years, change from a job in one organization to a job in another organization?" (0 = *no*, 1 = *yes*) and, if they had changed jobs during the 2 previous years, "Was this a voluntary job change?" (0 = *non voluntary*, 1 = *voluntary*).

**Control variables.** According to Spector and Brannick (2010), researchers should include control variables in the analyses for which there is reasonable theoretical or empirical evidence that these variables are related to other variables in the study. Therefore, we included respondents' age as control variable in our analyses as age has been found to be negatively related to turnover intentions (Gambino, 2010) and actual voluntary turnover (Ng & Feldman, 2009).

## Results

Table 1 reports the means, standard deviations, and intercorrelations of the variables measured at Time 1 and Time 2. As expected, older employees reported lower turnover intentions at Time 1 and less often changed their jobs than younger employees. In all our further analyses, we controlled for age.

**Table 1.** Means, Standard Deviations, and Correlations Among Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Age (T1)	35.50	10.56	—									
2. Challenging assignments (T1)	3.08	0.98	-.06	.90								
3. On-the-job learning (T1)	3.54	1.01	-.02	.61**	.85							
4. Turnover intentions (T1)	2.65	1.33	-.19**	-.18**	-.26**	—						
5. Job search behaviors (T1)	2.71	0.99	-.07	-.09*	-.17**	.54**	.75					
6. Voluntary turnover (T2) <sup>a</sup>	0.16	0.36	-.15**	-.03	-.08	.31**	.22**	—				
7. Challenging assignments (T2) <sup>b</sup>	3.09	1.10	-.06	.39**	.32**	-.04	-.00	-.15**	.92			
8. On-the-job learning (T2) <sup>b</sup>	3.44	1.01	.00	.36**	.44**	-.15**	-.18**	-.26**	.65**	.86		
9. Change challenging assignments	0.01	1.13	.00	-.45**	-.21**	.12*	.04	-.15**	.64**	.33**	.86	
10. Change in on-the-job learning	-0.12	1.05	.01	-.21**	-.49**	.10	-.00	-.20**	.31**	.56**	.52**	.74

Note: Cronbach's alphas are displayed in the diagonal of the table. For variables 1 to 5,  $n = 674$  to 689. For variables 6 to 10,  $n = 351$  to 381, measures were taken 2 years later (Time 2).

a. 0 = no, 1 = yes.

b. Respondents who changed jobs between Time 1 and Time 2 reported about the Time 1 job.

\* $p < .05$ . \*\* $p < .01$ .

**Table 2.** Regression Analyses Predicting On-the-Job Learning, Turnover Intentions, and Job Search Behaviors

	On-the-job learning		Turnover intentions		Job search behaviors	
	1	2	3	4	5	
Age	.01	-.21***	-.20***	-.08	-.07	
Challenging assignments	.63***	-.20***		-.09*		
On-the-job learning			-.27***			-.17***
R <sup>2</sup>	.39***	.08***	.11***	.01**	.03***	
F	218.34***	27.78***	41.48***	4.62**	11.18***	
df	2, 672	2, 673	2, 682	2, 673	2, 682	

Note: Standardized regression coefficients are reported, *n* ranges from 674 to 689.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Zero-order correlations between challenging assignments and on-the-job learning were substantial (*r* = .61 and *r* = .65 at Time 1 and Time 2, respectively). Therefore, we examined whether these scales could be treated as different constructs with the larger sample at Time 1. The overall fit of the measurement model to the data was performed with LISREL 8.80. Furthermore, a two-factor model (including challenging assignments and on-the-job learning) was compared with a one-factor model (including all scale items). The two-factor model yielded a better fit to the data ( $\chi^2 = 109.15, p = .00, df = 26, NNFI = 0.96, CFI = 0.97, IFI = 0.97, SRMR = 0.05$ ) than the one-factor solution ( $\chi^2 = 273.08, p = .00, df = 27, \Delta\chi^2 = 163.93, \Delta df = 1, p = .00, NNFI = 0.89, CFI = 0.92, IFI = 0.92, SRMR = 0.08$ ).

### Hypotheses Testing

We predicted that challenging assignments would be positively related to on-the-job learning (Hypothesis 1) and negatively related to turnover intentions (Hypothesis 2a) and job search behaviors (Hypothesis 2b). We also proposed that on-the-job learning would mediate the relationships between challenging assignments and turnover intentions (Hypothesis 3a) and job search behaviors (Hypothesis 3b). We used regression analyses to test these hypotheses. All hypotheses were tested 2-sided and we report exact *p* values, as the use of cutoff scores can be arbitrary and misleading (Aguinis et al., 2010).

As can be seen in Table 2 (column 1), age and challenging assignments explained 39% of the variance in on-the-job learning,  $R^2 = .39, F(2, 672) = 218.34, p = .00$ . Age ( $\beta = .01, p = .703$ ) was not related to on-the-job learning. Challenging assignments were positively related to on-the-job learning ( $\beta = .63, p = .00$ ), thereby supporting Hypothesis 1.

As shown in the second and fourth column of Table 2, age and challenging assignments together explained 8% of the variance in turnover intentions,  $R^2 = .08$ ,  $F(2, 673) = 27.78$ ,  $p = .00$ , and 1% of the variance in job search behaviors,  $R^2 = .01$ ,  $F(2, 673) = 4.62$ ,  $p = .01$ . Age was negatively related to turnover intentions ( $\beta = -.21$ ,  $p = .00$ ) and job search behaviors ( $\beta = -.08$ ,  $p = .051$ ). As expected, challenging assignments were negatively related to both turnover intentions ( $\beta = -.20$ ,  $p = .00$ ) and job search behaviors ( $\beta = -.09$ ,  $p = .016$ ), thereby supporting Hypotheses 2a and 2b.

For establishing mediation (Hypotheses 3a and 3b), we followed the procedure as recommended by LeBreton and colleagues (LeBreton, Wu, & Bing, 2009). After having tested our Hypothesis 1, that is, the relationship between the independent variable (challenging assignments) and the mediator variable (on-the-job learning), we also tested the relationships between the mediator and the dependent variables (turnover intentions and job search behaviors). As can be seen in Table 2 (columns 3 and 5), on-the-job learning was negatively related to both turnover intentions ( $\beta = -.27$ ,  $p = .00$ ) and job search behaviors ( $\beta = -.17$ ,  $p = .00$ ).

In addition, we used structural equation modeling (SEM) which allows for simultaneously estimating all parameters. We compared three models: a full model, an indirect-only model, and a direct-only model. Age was included as a control variable in these models. The analyses with regard to Hypothesis 3a showed that both the full model ( $\chi^2 = 1.93$ ,  $p = .38$ ,  $df = 2$ , NNFI = 1.00, CFI = 1.00, IFI = 1.00, SRMR = 0.02) and the indirect-only model ( $\chi^2 = 2.68$ ,  $p = .44$ ,  $df = 3$ , NNFI = 1.00, CFI = 1.00, IFI = 1.00, SRMR = 0.02) fit the data equally well, whereas a direct-only model produced a poorer fit ( $\chi^2 = 366.24$ ,  $p = .00$ ,  $df = 4$ , NNFI = -0.32, CFI = 0.12, IFI = 0.13, SRMR = 0.22). The standardized regression weights of the indirect-only model were 0.63 ( $p = .00$ ) for the relationship between challenging assignments and on-the-job learning and -0.27 ( $p = .00$ ) for the relationship between on-the-job learning and turnover intentions. Hence, the estimated indirect effect ( $bmx \times bym$ ) was -0.15. The analyses with regard to Hypothesis 3b showed similar results: both the full model ( $\chi^2 = 1.93$ ,  $p = .38$ ,  $df = 2$ , NNFI = 1.00, CFI = 1.00, IFI = 1.00, SRMR = 0.02) and the indirect-only model ( $\chi^2 = 2.14$ ,  $p = .54$ ,  $df = 3$ , NNFI = 1.00, CFI = 1.00, IFI = 1.00, SRMR = 0.02) fit the data equally well, whereas a direct-only model produced a poorer fit ( $\chi^2 = 352.71$ ,  $p = .00$ ,  $df = 4$ , NNFI = -0.47, CFI = 0.02, IFI = 0.02, SRMR = 0.21). The standardized regression weights of the indirect-only model were 0.63 ( $p = .00$ ) for the relationship between challenging assignments and on-the-job learning and -0.17 ( $p = .00$ ) for the relationship between on-the-job learning and job search behaviors. Hence, the estimated indirect effect ( $bmx \times bym$ ) was -0.10. These analyses indicated that both Hypotheses 3a and 3b were supported.

We further proposed that changes in challenging assignments over time would be related to voluntary turnover when controlled for turnover intentions and job search behaviors at Time 1 (Hypothesis 4) and that this relationship would be mediated by over-the-time changes in on-the-job learning (Hypothesis 5). We calculated the change in challenging assignments and on-the-job learning by subtracting the absolute scores of the Time 1 measurements from the absolute scores of the Time 2 measurements. The use of residual scores as indicators of change are sometimes preferred as it has the advantage of not inflating error that might occur with the use of difference scores (Cronbach & Furby, 1970). However, when using residual scores, researchers are no longer measuring actual change in scores as the residual score from the regression indicates who has changed more, or less, than expected based on their baseline score (Wainer, 1991; Wright, 2006). Smith and Beaton (2008) argue that, given the assumption that the scores on psychosocial work conditions (in our case, challenging assignments and on-the-job learning) are “unlikely to increase or decrease without a catalyst (i.e., some change in actual working conditions or change in perception) and the interest is in the amount of change in the scores between time points, the correct method of analysis would be to use the difference score as opposed to the residual score” (p. 291). Therefore, we ran our analyses with using difference scores. Yet reanalyzing our data with residual scores provided similar results. Furthermore, we tested some basic assumptions underlying the use of difference scores.

First, we examined the reliability of the difference scores. As has been recommended (Smith & Beaton, 2008), we calculated the reliability of the difference score using Traub’s (1994) formula to show that the difference scores used in this study are reliable:

$$\rho^2 D = \frac{\sigma^2 t_2 \rho t_2 + \sigma^2 t_1 \rho t_1 - 2 \sigma t_1, t_2}{\sigma^2 t_2 + \sigma^2 t_1 - 2 \sigma t_1, t_2}$$

where  $\rho^2 D$  = the reliability of the difference score,  $\sigma^2 t_2$  = the variance of the scores at T2,  $\rho t_2$  = the reliability of scores at T2,  $\sigma^2 t_1$  = the variance of the scores at T1,  $\rho t_1$  = the reliability of scores at T1, and  $\sigma t_1, t_2$  = the covariance between T1 and T2.

Reliability of the difference score for challenging assignments was .86, reliability of the difference score for on-the-job learning was .74, which are both well above the .50 norm that was proposed by Streiner and Norman (1995).

In addition, we examined whether the measures at Time 1 reflected the same constructs as the comparable measures at T2 (Smith & Beaton, 2008).

**Table 3.** Factorial Invariance Test

Model	Factorial invariance	$\chi^2$	<i>df</i>	$\Delta\chi^2$	$\Delta df$	NNFI	CFI	IFI	SRMR
1	Baseline	306.19	120			.97	.98	.98	.044
2	Weak <sup>a</sup>	314.97	127	8.78	7	.97	.98	.98	.051
3	Strong <sup>a</sup>	324.14	134	17.95	14	.97	.98	.98	.051
4	Strict <sup>a</sup>	345.94	143	39.75	23	.97	.98	.98	.052

Note: NNFI = Nonnormed Fit Index, CFI = Comparative Fit Index, IFI = Incremental Fit Index, SRMR = standardized root mean square residual.

a. The model is compared with Model 1.

We examined the equivalence of the challenging assignments and on-the-job learning constructs over time by testing invariance of the factorial structure of these constructs using LISREL 8.80 (Jöreskog & Sörbom, 2001). We estimated four models: a baseline model, a weak-measurement invariance model, a strong-measurement invariance model, and a strict-measurement invariance model, respectively. These models are increasingly restrictive. No restrictions were imposed in the baseline model (Model 1, Table 3). The factor loadings ( $\Lambda$ ) are constrained to be equal in the weak-measurement invariance model (Model 2, Table 3). In addition, the factor loadings and the intercepts of observed variables ( $T$ ) are constrained to be equal in the strong-measurement invariance model (Model 3, Table 3). Finally, the factor loadings, the intercepts of observed variables, and residual variances ( $\Theta_e$ ) are constrained to be equal in the strict-measurement invariance model (Model 4, Table 3).

Table 3 shows that all models yielded an excellent fit to the data. Only the fit of the strict-factorial invariance model ( $\chi^2 = 345.94$ ,  $p = .00$ ,  $df = 143$ , SRMR=0.052, NNFI = 0.97, CFI = 0.98, IFI = 0.98) differed from the fit of the baseline model ( $\Delta\chi^2 = 39.75$ ,  $\Delta df = 23$ ,  $p = .02$ ). Thus, the data showed statistical support for sufficient equivalence of the constructs over time.

Finally, we tested for the constraints that are imposed on the use of difference scores.<sup>1</sup> The use of a difference score to predict a dependent variable would look like

$$Y = b_0 + b_1 (X_2 - X_1) + e \quad (1)$$

where  $Y$  is the dependent variable and  $X_1$  and  $X_2$  are the independent variables measured at Times 1 and 2, respectively. Equation (1) imposes a constraint that the coefficients on  $X_1$  and  $X_2$  are equal in magnitude but opposite in sign, which can be seen by expanding this equation into

<sup>1</sup>We thank Jeffrey Edwards and the anonymous reviewers for their advice.

$$Y = b_0 + b_1X_2 - b_1X_1 + e \quad (2)$$

Therefore, we tested for this constraint by conducting two regression analyses with voluntary turnover as the dependent variable. As voluntary turnover is a dichotomous variable, we used logistic regression analyses. Logistic regression analysis is a nonlinear regression model that does not provide an  $R^2$  and  $F$  statistic to test overall model fit. Instead, overall and improvement chi-squared tests can be computed from the log-likelihood statistics (Hosmer & Lemeshow, 2000). Logistic coefficients ( $B$ ) represent the degree to which the log odds of the event occurring are changed for each unit increase in the associated independent variable. The odds ratio for a variable indicates the change in odds for a case when the value of that variable increases by 1.

In the first regression, we entered Time 1 and Time 2 on-the-job learning as the independent variables and in the second regression, we entered Time 1 and Time 2 challenging assignments as the independent variables. In both regressions, we also included age, and Time 1 turnover intentions and job search behaviors. The results of the first logistic regression indicated that the independent variables could significantly explain variance in voluntary turnover,  $\chi^2(5, N = 335) = 67.55, p < .001$ ; Time 1 on-the-job learning was positively related to voluntary turnover ( $B = .50, p < .05$ ), and Time 2 on-the-job learning was negatively related to voluntary turnover ( $B = -.93, p < .001$ ). In a similar vein, the second logistic regression showed that the independent variables could significantly explain variance in voluntary turnover,  $\chi^2(5, N = 335) = 54.71, p < .001$ ; Time 1 challenging assignments was positively related to voluntary turnover ( $B = .45, p < .05$ ), and Time 2 challenging assignments was negatively related to voluntary turnover ( $B = -.59, p < .001$ ). The  $B$  weight of Time 2 on-the-job learning was somewhat larger than  $B$  weight of Time 1 on-the-job learning, whereas the  $B$  weights of Time 1 and Time 2 challenging assignments were equal in magnitude. Both regressions showed that the  $B$  weights of the Time 1 and Time 2 measures were opposite in sign. Altogether, these results justify the constraint that is imposed on the use of a difference score. Therefore, Hypotheses 4 and 5 were tested with difference scores.

Hypothesis 4 was tested with logistic regression analysis with turnover as the dependent variable. Age, Time 1 turnover intentions and job search behaviors, and the change in challenging assignments between Time 1 and Time 2 (i.e.,  $\Delta$  challenging assignments) were entered in the analysis. Table 4 (columns 1-3) presents the results of the logistic regression analysis for voluntary turnover. The results indicated that age, turnover intentions and job search behaviors (T1), and delta challenging assignments could significantly

**Table 4.** Logistic Regression Analyses Predicting Voluntary Turnover

	B 1	Wald 2	Exp B 3	B 4	Wald 5	Exp B 6
Age (T1)	-.04	5.97*	0.96	-.04	5.47*	0.96
Turnover intentions (T1)	.69	17.82***	1.99	.73	19.41***	2.07
Job search behaviors (T1)	.18	0.97	1.21	.18	0.93	1.20
Δ Challenging assignments	-.54	13.13***	0.58			
Δ On-the-job learning				-.74	18.60***	0.48
-2 log likelihood		240.29			236.40	
$\chi^2$		54.19***			62.86***	
df, n		4, 351			4, 355	

Note: Included were respondents who participated at both Time 1 and Time 2 0 = no, 1 = yes.  
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

explain variance in voluntary turnover,  $\chi^2(4, N = 351) = 54.19, p = .00$ . Turnover intention at Time 1 was positively related to voluntary turnover ( $B = .69$ , Wald = 17.82, Exp  $B = 1.99, p = .00$ ). Age ( $B = -.04$ , Wald = 5.97, Exp  $B = 0.96, p = .015$ ) and change in challenging assignments ( $B = -.54$ , Wald = 13.13, Exp  $B = .58, p = .00$ ) were negatively related to voluntary turnover. Job search behaviors at Time 1 were not related to voluntary turnover ( $B = .19$ , Wald = 0.97, Exp  $B = 1.21, p = .32$ ), which might be due to the relatively high correlation between Time 1 turnover intentions and job search behaviors ( $r = .57, p = .00$ ). The full model correctly predicted voluntary turnover of 84.9% of the respondents. These results indicate that the change in challenging assignments explained variance in voluntary turnover over and above turnover intentions and job search behaviors respondents held at Time 1, suggesting that (a) respondents who initially had high turnover intentions may not have lived up to those intentions due to an increase in challenging assignments between the Time 1 and Time 2 measurements and (b) respondents who initially had low turnover intentions may have left their organization due to a decrease in challenging assignments. These results support Hypothesis 4.

We further examined whether the change in on-the-job learning over time could explain the relationship between the change in challenging assignments and voluntary turnover (Hypothesis 5). Again, we followed the procedure as recommended by LeBreton et al. (2009). First, we tested the relationships between the independent variable (changes in challenging assignments) and the mediator variable (changes in on-the-job learning), and between the mediator and the dependent variable (voluntary turnover). A linear regression analysis with changes in on-the-job learning as dependent variable

and age, initial turnover intentions, job search behaviors, and change in challenging assignments as independent variables showed that, together, these variables explained 27% of the variance in the change in on-the-job learning,  $R^2 = .27$ ,  $F(4, 346) = 32.41$ ,  $p = .00$ . Change in challenging assignments was related to change in on-the-job learning ( $\beta = .51$ ,  $p = .00$ ). Age ( $\beta = .02$ ,  $p = .636$ ), initial turnover intentions ( $\beta = .10$ ,  $p = .086$ ), and initial job search behaviors ( $\beta = -.08$ ,  $p = .20$ ) were not related to change in on-the-job learning. A logistic regression analysis (see Table 4, columns 3-6) with voluntary turnover as dependent variable and age, initial turnover intentions, job search behaviors, and changes in on-the-job learning as independent variables showed that change in on-the-job learning was significantly related to voluntary turnover ( $B = -.74$ , Wald = 18.60, Exp  $B = .48$ ,  $p = .00$ ).

Finally, with the use of SEM, we compared three models: a full model, an indirect-only model, and a direct-only model. Age and Time 1 turnover intentions and job search behaviors were included as a control variable in these models. The analyses showed that both the full model ( $\chi^2 = 9.13$ ,  $p = .17$ ,  $df = 6$ , NNFI = 0.97, CFI = 0.99, IFI = 0.99, SRMR = 0.04) and the indirect-only model ( $\chi^2 = 11.89$ ,  $p = .10$ ,  $df = 7$ , NNFI = 0.97, CFI = 0.98, IFI = 0.98, SRMR = 0.04) fit the data equally well, whereas a direct-only model produced a poorer fit ( $\chi^2 = 126.67$ ,  $p = .00$ ,  $df = 8$ , NNFI = 0.28, CFI = 0.61, IFI = 0.62, SRMR = 0.13). The standardized regression weights of the indirect-only model were 0.52 ( $p = .00$ ) for the relationship between changes in challenging assignments and changes in on-the-job learning and  $-0.22$  ( $p = .00$ ) for the relationship between changes in on-the-job learning and voluntary turnover. Hence, the estimated indirect effect ( $b_{mx} \times b_{ym}$ ) was  $-0.12$ . These analyses indicated that Hypothesis 5 was supported.

## Discussion

This study examined challenging assignments as manageable means to reduce employees' turnover intentions, job search behaviors, and voluntary turnover. Thereby, we addressed a dilemma many organizations face, namely, that providing opportunities for learning and development to motivate and retain valuable employees may also increase employees' opportunities for employment in other organizations (e.g., Cappelli, 2004; Green, Felstead, Mayhew, & Pack, 2000; Ito & Brotheridge, 2005) and, thus, may result in higher voluntary turnover.

The results offer several important contributions to the literatures on job challenge, on-the-job learning, and voluntary turnover. First, most existing research on the consequences of job challenge focused on positive outcomes

for employees, such as on-the-job learning (DeRue & Wellman, 2009; Dragoni et al., 2009; McCauley et al., 1994) and promotability evaluations (De Pater, Van Vianen, Bechtoldt et al., 2009). We extended this line of research by linking challenging assignments to employees' turnover intentions and job search behaviors, variables that are of paramount importance for organizations. Moreover, and perhaps more importantly, applying a two-wave design, we showed that changes over time in challenging assignments explained variance in voluntary turnover after controlling for turnover intentions and job search behaviors measured at Time 1. **This finding is novel and suggests that challenging assignments are not only beneficial for individual employees but also for employee development and retention. This is important because "in order to survive in the dynamic global economy it is crucial to retain and motivate one's personnel"** (de Lange, De Witte, & Notelaers, 2008, p. 201).

Second, to date, most research on outcomes of job challenge has pointed out the beneficial effects of job challenge in the context of management development (e.g., DeRue & Wellman, 2009; Dragoni et al., 2009; McCauley et al., 1994). We have extended the research on job challenge by showing beneficial outcomes of job challenge within a sample of employees working in the health care and welfare sector.

Third, our data showed that the relationships between challenging assignments and turnover intentions and job search behaviors are mediated by on-the-job learning. This finding contributes to the literature that addresses the dilemma between providing employees with learning opportunities and concerns regarding their increased labor market opportunities and possibly higher intentions to leave the organization (e.g., Campbell & Campbell, 2003; Ito & Brotheridge, 2005; Mueller & Price, 1990). The results of this study do not oppose to human capital theory (Becker, 1962) that argues that the enhancement of employees' human capital increases their attractiveness in the labor market. However, the present study focused on employees' own career decisions as influenced by their challenging and learning experiences on the job. **We found that these experiences resulted in the decision to stay in their organization. This finding supports the human resource management perspective (e.g., Barrett & O'Connell, 2001; Lee & Bruvold, 2003; Paré & Tremblay, 2007) that considers organizational initiatives for employee development as a means to increase organizational commitment and to reduce voluntary turnover.**

Fourth, although a vast body of research examined determinants of voluntary turnover (for an overview, see Cotton & Tuttle, 1986; Griffeth et al., 2000; Maertz & Campion, 1998), this research has mainly focused on employees' alternative job perceptions (Arnold & Feldman, 1982; Gerhart, 1990;

Gerhart & Rynes, 1991) and their job attitudes (Jaros, 1997; T. W. Lee & Mitchell, 1991; Tett & Meyer, 1993). Although alternative job perceptions tend to be an established predictor of voluntary turnover (Griffeth et al., 2000), the nature of this variable does not provide a deep understanding of why people leave their jobs (Barrick & Zimmerman, 2005). People's general job attitudes such as their job satisfaction (e.g., Mobley, 1977; Tett & Meyer, 1993) and organizational commitment (e.g., Lee & Mitchell, 1991; Tett & Meyer, 1993) are also well-established predictors of voluntary turnover (e.g., Griffeth et al., 2000). However, as these attitudes reflect broad feelings toward one's job or organization (Locke, 1976; Meyer & Allen, 1991), they hardly offer a starting point of what organizations can actually do to reduce voluntary employee turnover. Organizations' ability to predict, prevent, and understand voluntary turnover thus remains limited (Allen, Weeks, & Moffitt, 2005; Aquino, Griffeth, Allen, & Hom, 1997), which calls for new theories and models (Griffeth et al., 2000; Lee, Mitchell, Sablinski, Burton, & Holtom, 2004) that include other, significant antecedents of voluntary turnover that can be managed by organizations and their supervisors (Morrow et al., 2005). **We believe that our findings, linking challenging assignments to voluntary turnover, makes a contribution in this regard.**

Our results have practical implications as well. First, companies spend billions on formal employee training and development programs (Frazis, Herz, & Horrigan, 1995) because the development and learning of employees can lead to organizational success (Barrie & Pace, 1998). **However, formal training and development has also been related to increased turnover rates (Benson et al., 2004; Campbell & Campbell, 2003; Ito & Brotheridge, 2005), which might harm organizations. Learning on the job has been found to contribute more than formal classroom training programs to learning and development (e.g., Clarke, 2004; Yip & Wilson, 2010). The results of our study showed that challenging assignments not only result in on-the-job learning but also lowers employees' turnover intentions, job search behaviors, and voluntary turnover. Based on these results, we believe that organizations should consider challenging assignments as a good alternative for expensive formal training programs.**

Second, in today's highly competitive and dynamic labor market, it is of utmost importance for organizations to understand how to retain their valuable employees. In view of our findings that challenging assignments enhance on-the-job learning and lower voluntary turnover, **supervisors in particular could play an active role by providing their employees with challenging assignments.** In addition, supervisors could help their employees to look for challenging work and encourage them to take up challenging tasks (De Pater, Van Vianen,

Humphrey et al., 2009). This is especially the case as individuals nowadays play an active role in determining the content of their own jobs and roles (De Pater, Van Vianen, Humphrey et al., 2009; Dickerson & Taylor, 2000; Lyness & Schrader, 2006) and must take responsibility for their own learning opportunities (Gherardi, Nicolini, & Odella, 1998) and development (Hall, 2002).

### Limitations

Like with any research, we should acknowledge several limitations associated with the present study. First, we relied on employees' self-reports of challenging assignments, on-the-job learning, turnover intentions, and job search behaviors. It has been noted that the use of self-reports as indicators of the objective environment may decrease measurement accuracy (Spector & Jex, 1991). There is, however, considerable evidence that perceptual measures do reflect the objective environment (Spector, 1992). Moreover, people's attitudes and behaviors are mostly influenced by their *perceptions* of their work environment (Ferris & Judge, 1991). Besides, because challenge is foremost in the eye of the beholder, it is usually studied with self-report measures (e.g., De Pater, Van Vianen, Bechtoldt et al., 2009; McCauley et al., 1994). Therefore, the use of self-reports in our study may not have limited the reliability of our measures and the validity of our findings as much as sometimes is assumed.

A second possible limitation relates to the cross-sectional design we used to examine relationships between challenging assignments, on-the-job learning, and turnover intentions and job search behaviors. The cross-sectional nature of the data cannot provide conclusive evidence for causal relationships between challenging assignments and turnover intentions and job search behaviors. However, in a predictive study, employees' work experiences may change during the time between the measurement of the predictor variables and the criterion variables. Therefore, with work experience as central variable, it seems more appropriate to collect both the dependent and independent variables at the same time (McDaniel et al., 1988). Moreover, by showing that changes over time in challenging assignments impact voluntary turnover above and beyond employees' turnover intentions and job search behaviors as measured at Time 1, we were able to provide at least some evidence for the causality of the relationship between job challenge and voluntary turnover.

A third potential limitation relates to the sample of our study, which consisted of employees working in health care and welfare organizations. This may have restricted the generalizability of our findings to other occupations and industries, especially as there are many alternative jobs available in the

health care and welfare sector. Yet the professionals in our sample worked in a wide variety of health care and welfare institutions and jobs all over the Netherlands and, therefore, showed natural variance with regard to our measures (Fox, Dwyer, & Ganster, 1993). Furthermore, an advantage of the use of a one-occupation sample is that there is only little variance in socio-economic status, which precludes confounding effects (de Jonge et al., 2001).

A fourth possible weakness relates to the attrition between Time 1 and Time 2 measurements, which was considerable. However, respondents who participated in both measurements did not differ regarding their gender, mean age, and the main variables in our study (i.e., challenging assignments, on-the-job learning, turnover intentions, and job search behaviors measured at Time 1) from the respondents who only filled out the Time 1 questionnaire. Furthermore, the turnover rate as reported in our study is quite similar to national turnover rates for the health care and welfare sector in the Netherlands. In 2008, the average gross turnover rate (i.e., the percentage of employees that leave their organization either voluntarily or involuntarily in 1 year) was 9.7% (Van der Windt, Van der Velde, & Van der Kwartel, 2009). In our sample, the voluntary turnover rate in 2 years was 16%. Therefore, it seems unlikely that attrition might have biased the results of the present study.

Finally, we measured employees' turnover intentions with only one item. Although single-item measures are frequently used in human resource management and in organizational behavior research, a psychometric shortcoming of these measures is that they cannot yield estimates of internal consistency reliability (Wanous, Reichers, & Hudy, 1997). Yet studies that compared single-item to multiple-item measures for, among others, job satisfaction, self-esteem, teaching effectiveness, attitudes, beliefs, and perceptions (Gardner, Cummings, Dunham, & Pierce, 1998; Wanous & Hudy, 2001; Wanous et al., 1997) reported satisfactory correlations between the different measures. Therefore, we believe using a one-item measurement of turnover intentions that has often been used in previous research (e.g., Davy et al., 1997; Hom & Griffeth, 1991; Johnston et al., 1993) might not be optimal but adequate for the purpose of our study.

### *Future Research*

We hypothesized that challenging assignments, through on-the-job learning, would negatively relate to employees' turnover intentions, job search behaviors, and voluntary turnover. We argued that challenging assignments could be considered as a job resource that stimulates employees' intrinsic motivation and work engagement, which have been found to negatively impact turnover intentions, job search behaviors, and voluntary turnover (Griffeth et al., 2000;

Houkes et al., 2001; Richer et al., 2002). Specifically, we proposed that challenging assignments and the subsequent on-the-job learning would increase employees' intrinsic motivation and work engagement by enhancing the psychological meaningfulness of their work (Hackman & Oldham, 1980; Kahn, 1990) and by satisfying employees' inherent needs for competence and autonomy (Gagné & Deci, 2005; Ryan & Deci, 2000). Future research could examine this line of reasoning to find support for these theoretical assumptions. Another option for future research is the possibility that employees perceive the provision of challenging assignments as a means of supervisor support (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002). Perceived supervisor support is likely to increase employees' commitment to the organization (e.g., Eisenberger et al., 2002; Ng & Sorensen, 2008) and, thus, may lower turnover intentions, job search behaviors, and voluntary turnover.

Related to the above, we assumed that all employees are attracted to and benefit from challenging assignments. This assumption is in line with self-determination theory (Ryan & Deci, 2000) that focuses on the *extent* to which employees' needs are satisfied in their work environment rather than on the consequences of individual differences in the strengths of those needs (Gagné & Deci, 2005). Challenging assignments may, however, also have negative effects, such as work stress, work overload, or even withdrawal behaviors, particularly if the challenge becomes too much. Hence, future research should scrutinize when challenge will "hurt" and is a "threat". Whether challenging task assignments have negative effects on employees might depend on individual differences in their beliefs about their own abilities (Bandura, 1997). People tend to set nonchallenging, easy goals in their tasks when their task self-efficacy is low and generally pursue challenging, difficult goals when their task self-efficacy is high (Bandura, 1986; Wofford, Goodwin, & Premack, 1992). Individuals who have low self-efficacy beliefs may perceive a challenging assignment as a threat because they believe they lack capacities to fulfill the task. In a similar vein, employees' goal orientations may impact their reaction to challenging assignments. Goal orientation theory (Dweck, 1986; Dweck & Leggett, 1988) argues that people pursue different types of goals and distinguishes between two types of goal orientations: mastery or learning orientation and a performance orientation. Mastery-oriented people aim to develop competence by acquiring new skills and mastering new situations, whereas performance-oriented people aim to demonstrate and validate their competence by seeking favorable judgments and avoiding negative judgments. Individuals with a mastery orientation may thus react positively to challenging assignments, whereas individuals with a performance orientation may react less positively to this type of assignments.

Hence, future research should focus on possible moderators in the relationships between challenging assignments, on-the-job learning, turnover intentions, job search behaviors, and voluntary turnover.

In light of our finding that the provision of challenging tasks enhances on-the-job learning and reduces voluntary employee turnover, we believe that future research should also focus on gaining a thorough understanding of the factors that influence supervisors' task-allocation decisions. To date, virtually no research has examined supervisors' decisions regarding the allocation of challenging tasks. However, several processes underlying allocation decisions seem relevant to investigate. First, as delegating assignments to subordinates involves risk (Van de Vliert & Smith, 2004), supervisors may try to reduce that risk by delegating assignments to only those subordinates they trust to be both willing (Hersey & Blanchard, 1993) and able (De Pater et al., 2010; Leana, 1986) to perform well. Furthermore, supervisors may tend to allocate challenging tasks to those subordinates they perceive as similar to themselves (De Pater et al., 2010) as perceptions of similarity support the development of leader-member exchange relationships and enhance perceptions of an employee's trustworthiness and capabilities (Bauer & Green, 1996).

Based on the findings of this study, we would advise organizations to focus on internal options for employee development in particular. For organizations, it is better to invest in activities that develop those employees they want to maintain than in activities that develop employees they may lose.

## Appendix

### *Challenging Assignments Scale Items*

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My supervisor provides me with assignments

1. that are challenging;
  2. in which I have to deal with new situations and changes;
  3. that are high in responsibility;
  4. of which success and failure are clearly visible to other people;
  5. that require multiple skills;
  6. in which I have to deal with many different people.
- 

Note: For respondents who changed jobs between Time 1 and Time 2: My supervisor in my prior job provided me with assignments.

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## References

- Aarons, G. A., & Sawitzky, A. C. (2006). Organizational climate partially mediates the effect of culture on work attitudes and staff turnover in mental health services. *Administration & Policy in Mental Health & Mental Health Services Research, 33*, 289-301.
- Aguinis, H., Werner, S., Abbott, J. L., Angert, C., Park, J. H., & Kohlhausen, D. (2010). Customer-centric science: Reporting research results with rigor, relevance, and practical impact in mind. *Organizational Research Methods, 13*, 515-539.
- Allen, D. G., Weeks, K. P., & Moffitt, K. R. (2005). Turnover intentions and voluntary turnover: The moderating roles of self-monitoring, locus of control, proactive personality, and risk aversion. *Journal of Applied Psychology, 90*, 980-990.
- Aquino, K., Griffeth, R. W., Allen, D. G., & Hom, P. W. (1997). Integrating justice constructs into the turnover process: A test of a referent cognitions model. *Academy of Management Journal, 40*, 1208-1227.
- Aragón-Sánchez, A., Barba-Aragón, I., & Sanz-Valle, R. (2003). Effects of training on business results. *International Journal of Human Resource Management, 14*, 956-980.
- Arnold, H. J., & Feldman, D. C. (1982). A multivariate analysis of the determinants of job turnover. *Journal of Applied Psychology, 67*, 350-360.
- Arthur, W., Bennett, W., Edens, P. S., & Bell, S. T. (2003). Effectiveness of training in organizations: A meta-analysis of design and evaluation features. *Journal of Applied Psychology, 88*, 234-245.
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology, 22*, 309-328.
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.
- Bannan, K. J. (2003). Companies save time, money with online surveys. *B to B, 88*(6), 1-2.
- Barrett, A., & O'Connell, P. J. (2001). Does training generally work? Measuring the results of in-company training. *Industrial and Labor Relations Review, 54*, 647-662.
- Barrick, M. R., & Zimmerman, R. D. (2005). Reducing voluntary, avoidable turnover through selection. *Journal of Applied Psychology, 90*, 159-166.
- Barrie, J., & Pace, R. W. (1998). Learning for organizational effectiveness: Philosophy of education and human resource development. *Human Resource Development Quarterly, 9*, 39-54.

- Baruch, Y. (1999). Response rate in academic studies—A comparative analysis. *Human Relations, 52*, 421-438.
- Baruch, Y., & Holtom, B. C. (2008). Survey response rate level and trends in organizational research. *Human Relations, 61*, 1139-1160.
- Bauer, T. N., & Green, S. G. (1996). Development of leader-member exchange: A longitudinal test. *Academy of Management Journal, 39*, 1538-1567.
- Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy, 70*(5), 9-49.
- Bennett, J. B., Lehman, W. E. K., & Forst, J. K. (1999). Change, transfer climate, and customer orientation—A contextual model and analysis of change-driven training. *Group & Organization Management, 24*, 188-216.
- Benson, G. S., Finegold, D., & Mohrman, S. A. (2004). You paid for the skills, now keep them: Tuition reimbursement and voluntary turnover. *Academy of Management Journal, 47*, 315-331.
- Berings, M. G. M. C., Poell, R. F., & Simons, P. R.-J. (2008). Dimensions of on-the-job learning styles. *Applied Psychology: An International Review, 57*, 417-440.
- Berlew, D. E., & Hall, D. T. (1966). The socialization of managers: Effects of expectations on performance. *Administrative Science Quarterly, 11*, 207-223.
- Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2010). Transfer of training: A meta-analytic review. *Journal of Management, 36*, 1065-1105.
- Boswell, W. R., Roehling, M. V., LePine, M. A., & Moynihan, L. M. (2003). Individual job-choice decisions and the impact of job attributes and recruitment practices: A longitudinal field study. *Human Resource Management, 42*, 23-37.
- Brown, S. P., & Leigh, T. W. (1996). A new look at psychological climate and its relationship to individual job performance. *Journal of Applied Psychology, 81*, 358-368.
- Campbell, D. J., & Campbell, K. M. (2003). Global versus facet predictors of intention to quit: Differences in a sample of male and female Singaporean managers and non-managers. *International Journal of Human Resource Management, 14*, 1152-1177.
- Cappelli, P. (2004). Why do employers pay for college. *Journal of Econometrics, 121*, 213-241.
- Chartered Institute of Personnel and Development. (2005). *Employee turnover and retention*. Retrieved January 26, 2010, from <http://www.cipd.co.uk/subjects/hrpract/turnover/empturnretent.htm?IsSrchRes=1>.
- Cianni, M., & Romberger, B. (1995). Perceived racial, ethnic, and gender differences in access to developmental experiences. *Group & Organization Management, 20*, 440-459.
- Clarke, N. (2004). HRD and the challenges of assessing learning in the workplace. *International Journal of Training and Development, 8*, 140-156.

- Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. *Academy of Management Review, 11*, 55-70.
- Couper, M. P. (2000). Web surveys: A review of issues and approaches. *Public Opinion Quarterly, 64*, 464-494.
- Cronbach, L. J., & Furby, L. (1970). How we should measure "change"—Or should we? *Psychological Bulletin, 74*, 68-80.
- Davies, J., & Easterby-Smith, M. (1984). Learning and developing from managerial work experiences. *Journal of Management Studies, 21*, 169-183.
- Davy, J. A., Kinicki, A. J., & Scheck, C. L. (1997). A test of job security's direct and mediated effects on withdrawal cognitions. *Journal of Organizational Behavior, 18*, 323-349.
- de Jonge, J., Dormann, C., Janssen, P. P. M., Dollard, M. F., Landeweerd, J. A., & Nijhuis, F. J. N. (2001). Testing reciprocal relationships between job characteristics and psychological well-being: A cross-lagged structural equation model. *Journal of Occupational & Organizational Psychology, 74*, 29-46.
- de Lange, A. H., De Witte, H., & Notelaers, G. (2008). Should I stay or should I go? Examining longitudinal relations among job resources and work engagement for stayers versus movers. *Work & Stress, 22*, 201-223.
- De Pater, I. E., Van Vianen, A. E. M., & Bechtoldt, M. N. (2010). Gender differences in job challenge: A matter of task allocation. *Gender, Work & Organization, 17*, 433-453.
- De Pater, I. E., Van Vianen, A. E. M., Bechtoldt, M. N., & Klehe, U. C. (2009). Employees' challenging job experiences and supervisors' evaluations of promotability. *Personnel Psychology, 62*, 297-325.
- De Pater, I. E., Van Vianen, A. E. M., Fischer, A. H., & Van Ginkel, W. P. (2009). Challenging experiences: Gender differences in task choice. *Journal of Managerial Psychology, 24*, 4-28.
- De Pater, I. E., Van Vianen, A. E. M., Humphrey, R. H., Sleeth, R. G., Hartman, N. S., & Fischer, A. H. (2009). Individual task choice and the division of challenging tasks between men and women. *Group & Organization Management, 34*, 563-589.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*, 499-512.
- DeRue, D. S., & Wellman, N. (2009). Developing leaders via experience: The role of developmental challenge, learning orientation, and feedback availability. *Journal of Applied Psychology, 94*, 859-875.
- Dickerson, A., & Taylor, M. A. (2000). Self-limiting behavior in women. *Group & Organization Management, 25*, 191-210.
- Dillman, D. A. (2000). *Mail and Internet surveys: The tailored design method*. New York, NY: Wiley.
- Dragoni, L., Tesluk, P. E., Russell, J. E. A., & Oh, I.-S. (2009). Understanding managerial development: Integrating developmental assignments, learning orientation,

- and access to developmental opportunities in predicting managerial competencies. *Academy of Management Journal*, 52, 731-743.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, 41, 1040-1048.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256-273.
- Eisenberger, R., Stinglhamber, F., Vandenberghe, C., Sucharski, I. L., & Rhoades, L. (2002). Perceived supervisor support: Contributions to perceived organizational support and employee retention. *Journal of Applied Psychology*, 87, 565-573.
- Elliot, A. J., & Dweck, C. S. (2005). Competence and motivation: Competence as the core of achievement motivation. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 3-12). New York, NY: Guilford.
- Evans, J. R., & Mathur, A. (2005). The value of online surveys. *Internet Research*, 15, 195-219.
- Ferris, G. R., & Judge, T. A. (1991). Personnel/human resources management: A political influence perspective. *Journal of Management*, 17, 447-488.
- Ford, L. (2009). Improving training transfer. *Industrial and Commercial Training*, 41, 92-96.
- Ford, J. K., Quinones, M. A., Seago, D. J., & Sorra, J. S. (1992). Factors affecting the opportunity to perform trained tasks on the job. *Personnel Psychology*, 45, 511-527.
- Fox, M. L., Dwyer, D. J., & Ganster, D. C. (1993). Effects of stressful job demands and control on physiological and attitudinal outcomes in a hospital setting. *Academy of Management Journal*, 36, 289-318.
- Frazis, H. J., Herz, D. E., & Horrigan, M. W. (1995). Employer-provided training: Results from a new survey. *Monthly Labor Review*, 118(5), 3-17.
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, 26, 331-362.
- Gagné, M., Senécal, C. B., & Koestner, R. (1997). Proximal job characteristics, feelings of empowerment, and intrinsic motivation: A multidimensional model. *Journal of Applied Social Psychology*, 27, 1222-1240.
- Gambino, K. M. (2010). Motivation for entry, occupational commitment and intent to remain: A survey regarding registered nurse retention. *Journal of Advanced Nursing*, 66, 2532-2541.
- Gardner, D. G., Cummings, L. L., Dunham, R. B., & Pierce, J. L. (1998). Single-item versus multiple-item measurement scales: An empirical comparison. *Educational and Psychological Measurement* 58, 898-915.
- Gerhart, B. (1990). Voluntary turnover and alternative job opportunities. *Journal of Applied Psychology*, 75, 467-476.
- Gerhart, B., & Rynes, S. (1991). Determinants and consequences of salary negotiations by male and female MBA graduates. *Journal of Applied Psychology*, 76, 256-262.

- Gherardi, S., Nicolini, D., & Odella, F. (1998). Toward a social understanding of how people learn in organizations: The notion of situated curriculum. *Management Learning, 29*, 273-297.
- Glisson, C., & James, L. R. (2002). The cross-level effects of culture and climate in human service teams. *Journal of Organizational Behavior, 23*, 767-794.
- Green, F., Felstead, A., Mayhew, K., & Pack, A. (2000). The impact of training on labour turnover: Individual and firm-level evidence from Britain. *British Journal of Industrial Relations, 38*, 261-275.
- Griffeth, R. W., Hom, P. W., & Gaertner, S. (2000). A meta-analysis of antecedents and correlates of employee turnover: Update, moderator tests, and research implications for the next millennium. *Journal of Management, 26*, 463-488.
- Hackman, J. R., & Oldham, G. R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology, 60*, 159-170.
- Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
- Hall, D. T. (2002). *Careers in and out of organizations*. Thousand Oaks, CA: SAGE.
- Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology, 87*, 268-279.
- Hedge, J. W., Borman, W. C., & Lammlein, S. E. (2006). *The aging workforce: Realities, myths, and implications for organizations*. Washington, DC: American Psychological Association.
- Hersey, P., & Blanchard, K. H. (1993). *Management of organizational behavior: Utilizing human resources* (6th ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Hom, P. W., & Griffeth, R. W. (1991). Structural equations modeling test of a turnover theory: Cross-sectional and longitudinal analyses. *Journal of Applied Psychology, 76*, 350-366.
- Hosmer, D. W., & Lemeshow, S. (2000). *Applied logistic regression* (2nd ed.). New York, NY: Wiley.
- Houkes, I., Janssen, P. P. M., Jonge, J. D., & Nijhuis, F. J. N. (2001). Specific relationships between work characteristics and intrinsic work motivation, burnout and turnover intention: A multi-sample analysis. *European Journal of Work and Organizational Psychology, 10*, 1-23.
- Ito, J. K., & Brotheridge, C. M. (2005). Does supporting employees' career adaptability lead to commitment, turnover, or both? *Human Resource Management, 44*, 5-20.
- Jaros, S. J. (1997). An assessment of Meyer and Allen's (1991) three-component model of organizational commitment and turnover intentions. *Journal of Vocational Behavior, 51*, 319-337.
- Johnston, M. W., Griffeth, R. W., Burton, S., & Carson, P. P. (1993). An exploratory investigation in to the relationships between promotion and turnover: A quasi-experimental longitudinal study. *Journal of Management, 19*, 33-49.

- Jöreskog, K., & Sörbom, D. (2001). *LISREL 8.50: User's reference guide*. Chicago, IL: Scientific Software International.
- Judge, T. A., Bono, J. E., & Locke, E. A. (2000). Personality and job satisfaction: The mediating role of job characteristics. *Journal of Applied Psychology, 85*, 237-249.
- Kahn, W. H. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33*, 692-724.
- King, E. B., Botsford, W., Hebl, M. R., Kazama, S., Dawson, J. F., & Perkins, A. (2010). Benevolent sexism at work: Gender differences in the distribution of challenging developmental experiences. *Journal of Management*. Advance online publication. doi: 10.1177/0149206310365902.
- Kopelman, R. E., Rovenpor, J. L., & Millsap, R. E. (1992). Rationale and construct-validity evidence for the Job Search Behavior Index: Because intentions (and New Year's resolutions) often come to naught. *Journal of Vocational Behavior, 40*, 269-287.
- Kroch, E. A., & Sjoblom, K. (1994). Schooling as human capital or as a signal: Some evidence. *Journal of Human Resources, 29*, 156-180.
- Leana, C. R. (1986). Predictors and consequences of delegation. *Academy of Management Journal, 29*, 754-774.
- LeBreton, J. M., Wu, J., & Bing, M. N. (2009). The truth(s) on testing for mediation in the social and organizational sciences. In C. E. Lance & R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity, and fable in the organizational and social sciences* (pp. 107-141). New York, NY: Routledge.
- Lee, C. H., & Bruvold, N. T. (2003). Creating value for employees: Investment in employee development. *International Journal of Human Resource Management, 14*, 981-1000.
- Lee, T. W., & Mitchell, T. R. (1991). The unfolding effects of organizational commitment and anticipated job-satisfaction on voluntary employee turnover. *Motivation and Emotion, 15*, 99-121.
- Lee, T. W., Mitchell, T. R., Sablinski, C. J., Burton, J. P., & Holtom, B. C. (2004). The effects of job embeddedness on organizational citizenship, job performance, volitional absences, and voluntary turnover. *Academy of Management Journal, 47*, 711-722.
- Locke, E. A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1297-1349). Palo Alto, CA: Consulting Psychology Press.
- Loewenstein, M. A., & Spletzer, J. R. (1999). General and specific training: Evidence and implications. *Journal of Human Resources, 34*, 710-733.
- Loquercio, D. (2006). *Turnover and retention: A summary of current literature*. Retrieved from <http://www.peopleinaid.org/pool/files/publications/turnover-and-retention-lit-review-jan-2006.pdf>

- Lyness, K. S., & Schrader, C. A. (2006). Moving ahead or just moving? An examination of gender differences in senior corporate management appointments. *Group & Organization Management, 31*, 651-676.
- Lyness, K. S., & Thompson, D. E. (1997). Above the glass ceiling? A comparison of matched samples of female and male executives. *Journal of Applied Psychology, 82*, 359-375.
- Lyness, K. S., & Thompson, D. E. (2000). Climbing the corporate ladder: Do female and male executives follow the same route? *Journal of Applied Psychology, 85*, 86-101.
- Maertz, C. P., & Campion, M. A. (1998). 25 years of voluntary turnover research: A review and critique. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (Vol. 13, pp. 49-83). Chichester, UK: Wiley.
- Maglen, L. R. (1990). Challenging the human capital orthodoxy: The education-productivity link re-examined. *Economic Record, 66*, 281-294.
- McCall, M. W., Lombardo, M. M., & Morrison, A. M. (1988). *The lessons of experience: How successful executives develop on the job*. Lexington, MA: Lexington Books.
- McCauley, C. D., Ohlott, P. J., & Ruderman, M. N. (1999). *Job challenge profile*. New York, NY: Jossey-Bass/Pfeiffer.
- McCauley, C. D., Ruderman, M. N., Ohlott, P. J., & Morrow, J. E. (1994). Assessing the developmental components of managerial jobs. *Journal of Applied Psychology, 79*, 544-560.
- McCauley, C. D., Van Velsor, E., & Ruderman, M. N. (2010). Introduction: Our view of leadership development. In E. Van Velsor, C. D. McCauley, & M. N. Ruderman (Eds.), *The center for creative leadership handbook of leadership development* (3rd ed., pp. 1-61). San Francisco, CA: Jossey-Bass.
- McDaniel, M. A., Schmidt, F. L., & Hunter, J. E. (1988). Job experience correlates of job performance. *Journal of Applied Psychology, 73*, 327-330.
- Merriam, S., Caffarella, R., & Baumgartner, L. (2007). *Learning in adulthood: A comprehensive guide* (3rd ed.). New York, NY: Wiley.
- Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review, 1*, 61-98.
- Mobley, W. H. (1977). Intermediate linkages in the relationship between job satisfaction and employee turnover. *Journal of Applied Psychology, 62*, 237-240.
- Morrow, P. C., Suzuki, Y., Crum, M. R., Ruben, R., & Pautsch, G. (2005). The role of leader-member exchange in high turnover work environments. *Journal of Managerial Psychology, 20*, 681-694.
- Mueller, C. W., & Price, J. L. (1990). Economic, psychological, and sociological determinants of voluntary turnover. *Journal of Behavioral Economics, 19*, 321-335.

- Nauta, A. (2007). *Voorbij het "Boiling Frog" syndrome*. Amsterdam, Netherlands: Vossius Pers.
- Nauta, A., Vianen, A. V., Van der Heijden, B., Van Dam, K., & Willemsen, M. (2009). Understanding the factors that promote employability orientation: The impact of employability culture, career satisfaction, and role breadth self-efficacy. *Journal of Occupational and Organizational Psychology*, *82*, 233-252.
- Neslin, S. A., Novak, T. P., Baker, K. R., & Hoffman, D. L. (2009). An optimal contact model for maximizing online panel response rates. *Management Science*, *55*, 727-737.
- Ng, T. W. H., & Feldman, D. C. (2009). Re-examining the relationship between age and voluntary turnover. *Journal of Vocational Behavior*, *74*, 283-294.
- Ng, T. W. H., & Feldman, D. C. (2010). Human capital and objective indicators of career success: The mediating effects of cognitive ability and conscientiousness. *Journal of Occupational and Organizational Psychology*, *83*, 207-235.
- Ng, T. W. H., & Sorensen, K. L. (2008). Toward a further understanding of the relationships between perceptions of support and work attitudes: A meta-analysis. *Group & Organization Management*, *33*, 243-268.
- Paré, G., & Tremblay, M. (2007). The influence of high-involvement human resources practices, procedural justice, organizational commitment, and citizenship behaviors on information technology professionals' turnover intentions. *Group & Organization Management*, *32*, 326-357.
- Podsakoff, N. P., Lepine, J. A., & Lepine, M. A. (2007). Differential challenge stressor-hindrance stressor relationships with job attitudes, turnover intentions, turnover, and withdrawal behavior: A meta-analysis. *Journal of Applied Psychology*, *92*, 438.
- Price, J. L. (1977). *The study of turnover*. Ames: Iowa State University Press.
- Price, J. L., & Mueller, C. W. (1981). A causal model of turnover for nurses. *Academy of Management Journal*, *24*, 543-565.
- Proudfoot, J. G., Corr, P. J., Guest, D. E., & Dunn, G. (2009). Cognitive-behavioural training to change attributional style improves employee well-being, job satisfaction, productivity, and turnover. *Personality and Individual Differences*, *46*, 147-153.
- Richer, S. F., Blanchard, C., & Vallerand, R. J. (2002). A motivational model of work turnover. *Journal of Applied Social Psychology*, *32*, 2089-2113.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*, 68-78.
- Salopek, J. J. (2000). Retention. *Training and Development*, *54*, 20-23.
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi sample study. *Journal of Organizational Behavior*, *25*, 293-315.

- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire—A cross-national study. *Educational and Psychological Measurement, 66*, 701-716.
- Slaughter, J. E., Richard, E. M., & Martin, J. H. (2006). Comparing the efficacy of policy-capturing weights and direct estimates for predicting job choice. *Organizational Research Methods, 9*, 285-314.
- Smith, P., & Beaton, D. (2008). Measuring change in psychosocial working conditions: Methodological issues to consider when data are collected at baseline and one follow-up time point. *Occupational and Environmental Medicine, 65*, 288-296.
- Spector, P. E., & Brannick, M. T. (2010). Methodological urban legends: The misuse of statistical control variables. *Organizational Research Methods*. Advance online publication. doi: 10.1177/1094428110369842.
- Spector, P. E. (1992). A consideration of the validity and meaning of self-report measures for job-conditions. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (Vol. 7, pp. 123-151). Chichester, UK: John Wiley.
- Spector, P. E., & Jex, S. M. (1991). Relations of job characteristics from multiple data sources with employee affect, absence, turnover intentions, and health. *Journal of Applied Psychology, 76*, 46-53.
- Streiner, D. L., & Norman, G. R. (1995). Measuring change. In D. L. Streiner & G. R. Norman (Eds.), *Health measurement scales: A practical guide to their development and use* (2nd ed., pp. 163-180). New York, NY: Oxford University Press.
- Stroh, L. K., Brett, J. M., & Reilly, A. H. (1994). A decade of change: Managers' attachment to their organizations and their jobs. *Human Resource Management, 33*, 531-548.
- Taylor, M. S. (1981). The motivational effects of task challenge: A laboratory investigation. *Organizational Behavior and Human Performance, 27*, 255-278.
- Tett, R. P., & Meyer, J. P. (1993). Job satisfaction, organizational commitment, turnover intention, and turnover: Path analyses based on meta-analytic findings. *Personnel Psychology, 46*, 259-294.
- Toossi, M. (2007, November). Labor force projections to 2016: More workers in their golden years. *Monthly Labor Review, 130*, 33-52.
- Traub, R. E. (1994). *Reliability for the social sciences: Theory and applications*. Thousand Oaks, CA: SAGE.
- Van Dam, K. (2004). Antecedents and consequences of employability orientation. *European Journal of Work & Organizational Psychology, 13*, 29-51.
- Van de Vliert, E., & Smith, P. B. (2004). Leader reliance on subordinates across nations that differ in development and climate. *Leadership Quarterly, 15*, 381-403.
- Van den Broeck, A., De Cuyper, N., De Witte, H., & Vansteenkiste, M. (2010). Not all job demands are equal: Differentiating job hindrances and job challenges in

- the job demands-resources model. *European Journal of Work and Organizational Psychology*, 19, 735-759.
- Van der Windt, W., Van der Velde, F., & Van der Kwartel, A. (2009). *Arbeid in zorg en welzijn 2009* [Care and welfare work in 2009]. Utrecht, Netherlands: Prismant.
- Van Essen, G., Paardekoooper, P. J., Talma, H. F., & Van der Windt, W. (2006). *Arbeid in zorg en welzijn 2006* [Care and welfare work in 2006]. Utrecht, Netherlands: Prismant.
- Van Vianen, A. E. M., De Pater, I. E., & Preenen, P. T. Y. (2008). Career management: Taking control of the quality of work experiences. In J. Athanasou & R. Van Esbroeck (Eds.), *International handbook of career guidance* (pp. 283-301). London, UK: Springer.
- Wainer, H. (1991). Adjusting for differential base rates: Lord's paradox again. *Psychological Bulletin*, 109, 147-151.
- Wanous, J. P., & Hudy, M. J. (2001). Single-item reliability: A replication and extension. *Organizational Research Methods*, 4, 361-375.
- Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Estimating the reliability of a single-item measure. *Psychological Reports*, 78, 631-634.
- Wofford, J. C., Goodwin, V. L., & Premack, S. (1992). Meta-analysis of the antecedents of personal goal level and of the antecedents and consequences of goal commitment. *Journal of Management*, 18, 595-615.
- Wright, D. B. (2006). Comparing groups in a before-after design: When t test and ANCOVA produce different results. *British Journal of Educational Psychology*, 76, 663-676.
- Wright, T. A., & Cropanzano, R. (1998). Emotional exhaustion as a predictor of job performance and voluntary turnover. *Journal of Applied Psychology*, 83, 486-493.
- Yeo, R. K., & Marquardt, M. J. (2010). Problems as building blocks for organizational learning: A roadmap for experiential inquiry. *Group & Organization Management*, 35, 243-275.
- Yip, J., & Wilson, M. S. (2010). Learning from experience. In E. Van Velsor, C. D. McCauley, & M. N. Ruderman (Eds.), *The center for creative leadership handbook of leadership development* (3rd ed., pp. 63-95). San Francisco, CA: Jossey-Bass.

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